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10/036,067	10/19/2001	John E. Madocks	10630/9	3885

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DALE F. REGELMAN
LAW OFFICE OF DALE F. REGELMAN, P.C.
4231 SOUTH FREMONT AVENUE
TUCSON, AZ 85714

EXAMINER

ZERVIGON, RUDY

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 05/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/036,067

Applicant(s)

MADOCKS, JOHN E.

Examiner

Rudy Zervigon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 34-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 34-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 34-36, and 44 are rejected under 35 U.S.C. 102(b) as being anticipated by Kaufman; Harold R. et al. (US 5,274,306 A). Kaufman teaches a plasma treatment apparatus (Figure 3; column 8, line 30 - column 9, line 8), comprising: a top (76, 78, 80, Figure 3; column 8, line 30 - column 9, line 8) formed to include a gap (between 78/80, Figure 3; column 8, line 30 - column 9, line 8), a bottom (74, Figure 3), and one or more walls (72, Figure 3) interconnecting said top (76, 78, 80, Figure 3; column 8, line 30 - column 9, line 8) and said bottom (74, Figure 3), wherein said top (76, 78, 80, Figure 3; column 8, line 30 - column 9, line 8) comprises a first cathode (78, Figure 3) and a second cathode (80, Figure 3), and wherein said first cathode (78, Figure 3) and said second cathode (80, Figure 3) are separated by said gap (between 78/80, Figure 3; column 8, line 30 - column 9, line 8); one or more magnets (94, 88, 92, Figure 3), wherein said one or more walls (72, Figure 3) comprise said one or more magnets (94, 88, 92, Figure 3), wherein said one or more magnets (94, 88, 92, Figure 3) can generate a magnetic field comprising a first portion and a second portion, wherein said first portion is disposed between said top (76, 78, 80, Figure 3; column 8, line 30 - column 9, line 8) and said bottom (74, Figure 3), and wherein said second portion extends outwardly from said top (76, 78, 80, Figure 3; column 8, line 30 - column 9, line 8) –

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When the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

Kaufman further teaches:

- i. The apparatus (Figure 3; column 8, line 30 - column 9, line 8) of claim 34, further comprising a substrate disposed adjacent said top (76, 78, 80, Figure 3; column 8, line 30 - column 9, line 8) such that said second portion of said magnetic field portion is disposed between said top (76, 78, 80, Figure 3; column 8, line 30 - column 9, line 8) and said substrate, as claimed by claim 35 – Applicant's claim 35 requirements are intended use claim requirements. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).
- ii. The apparatus (Figure 3; column 8, line 30 - column 9, line 8) of claim 34, further comprising: a power supply (102, 106, 108, Figure 3) interconnected with said first cathode (78, Figure 3) and said second cathode (80, Figure 3); an anode (74, Figure 3) interconnected with said power supply (102, 106, 108, Figure 3), wherein said bottom (74, Figure 3) comprises said anode (74, Figure 3), as claimed by claim 36

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- iii. A plasma treatment apparatus (Figure 3; column 8, line 30 - column 9, line 8), comprising: a top (76, 78, 80, Figure 3; column 8, line 30 - column 9, line 8) formed to include a gap (between 78/80, Figure 3; column 8, line 30 - column 9, line 8), a bottom (74, Figure 3), and one or more walls (72, Figure 3) interconnecting said top (76, 78, 80, Figure 3; column 8, line 30 - column 9, line 8) and said bottom (74, Figure 3), wherein said top (76, 78, 80, Figure 3; column 8, line 30 - column 9, line 8) comprises a first cathode (78, Figure 3) and a second cathode (80, Figure 3), and wherein said first cathode (78, Figure 3) and said second cathode (80, Figure 3) are separated by said gap (between 78/80, Figure 3; column 8, line 30 - column 9, line 8); one or more magnets (94, 88, 92, Figure 3), wherein said one or more bottom (74, Figure 3) comprises said one or more magnets (94, 88, 92, Figure 3), wherein said one or more magnets (94, 88, 92, Figure 3) can generate a magnetic field comprising a first portion and a second portion, wherein said first portion is disposed between said top (76, 78, 80, Figure 3; column 8, line 30 - column 9, line 8) and said bottom (74, Figure 3), and wherein said second portion extends outwardly from said top (76, 78, 80, Figure 3; column 8, line 30 - column 9, line 8), as claimed by claim 44 – Applicant’s claim 44 requirements of “wherein said second portion extends outwardly from said top” are intended use claim requirements. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is

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capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 42 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaufman; Harold R. et al. (US 5,274,306 A). Kaufman is discussed above. Kaufman does not teach his apparatus (Figure 3; column 8, line 30 - column 9, line 8) of claim 34, wherein the magnetic field comprises a maximum strength magnetic field line, wherein the maximum strength magnetic field line has a maximum magnetic field strength B1 adjacent one of the cathodes and a minimum magnetic field strength B2 at a central portion of the gap (between 78/80, Figure 3; column 8, line 30 - column 9, line 8), and wherein B1/B2 is greater than 2. Kaufman further does not teach the apparatus (Figure 3; column 8, line 30 - column 9, line 8) of claim 42 wherein B1/B2 is greater than 4.

It would have been obvious to one of ordinary skill in that art at the time the invention was made to optimize Kaufman's magnet (94, 88, 92, Figure 3) strengths.

Motivation to optimize Kaufman's magnet (94, 88, 92, Figure 3) strengths includes minimizing the applied voltages to Kaufman's electrodes and for low pressure operation as taught by Kaufman (column 7, lines 6-34).

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5. Claims 37-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaufman; Harold R. et al. (US 5,274,306 A) in view of Flemming (USPat. 3,955,118). Kaufman is discussed above. Kaufman does not teach:

- i. The apparatus (Figure 3; column 8, line 30 - column 9, line 8) of claim 36, wherein said top (76, 78, 80, Figure 3; column 8, line 30 - column 9, line 8), bottom (74, Figure 3), and one or more walls (72, Figure 3) define a process chamber (82, Figure 3), and wherein said bottom (74, Figure 3) is formed to include a process gas inlet such that process gas from an external source can be introduced into said process chamber (82, Figure 3), as claimed by claim 37
- ii. The apparatus (Figure 3; column 8, line 30 - column 9, line 8) of claim 34 wherein at least one of the cathodes comprises a non-planar cathode surface, as claimed by claim 38
- iii. The apparatus (Figure 3; column 8, line 30 - column 9, line 8) of claim 38 wherein at least one of the cathodes comprises a facing cathode surface having a shape selected from the group consisting of: a point, a bevel, a rounded surface, a stepped surface, a ridged surface, and combinations thereof, as claimed by claim 39
- iv. The apparatus (Figure 3; column 8, line 30 - column 9, line 8) of claim 34 wherein the cathodes comprise ends and a central portion, and wherein the cathodes are shaped such that the gap (between 78/80, Figure 3; column 8, line 30 - column 9, line 8) is wider at the ends than at the central portion, as claimed by claim 40
- v. The apparatus (Figure 3; column 8, line 30 - column 9, line 8) of claim 40, wherein the ends of the cathodes are beveled, as claimed by claim 41

Flemming teaches a similar plasma generating apparatus (Figure 2) including:

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- vi. a process gas inlet (21,25; Figure 2) such that process gas from an external source can be introduced into said process chamber (82, Figure 3) - claim 37
- vii. a cathode (13; Figure 2) comprises a non-planar cathode surface - claim 38
- viii. a cathode (13; Figure 2) comprises a facing cathode surface having a shape selected from the group consisting of: a point, a bevel (contoured portion of 13; Figure 2), a rounded surface, a stepped surface, a ridged surface, and combinations thereof, as claimed by claim 39
- ix. a cathode (13; Figure 2) comprise ends and a central portion (22; Figure 2), and wherein the cathodes (13, 12; Figure 2) are shaped such that a gap (10+height of each 12, 13) is wider at the ends (10) than at the central portion (22), as claimed by claim 40
- x. the ends (22) of the cathode (13) is beveled, - claim 41

It would have been obvious to one of ordinary skill in that art at the time the invention was made to replace Kaufman's cathodes (78, 80) with Flemming's cathodes (13,12), and add Flemming's gas inlet

Motivation to replace Kaufman's cathodes (78, 80) with Flemming's cathodes (13,12), and add Flemming's gas inlet is for controlling the shape of the plasma discharge as taught by Flemming (column 3, lines 24-34) and for introducing plasma precursor gas as taught by Flemming, respectively.

Response to Arguments

6. Applicant's arguments with respect to claims 34-44 have been considered but are moot in view of the new grounds of rejection.

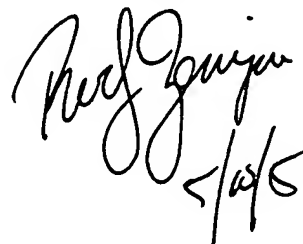
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Conclusion

7. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272.1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1763 art unit is (703) 872-9306. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435.



Rudy Zervigon
5/2/15